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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/608,619	06/30/2003	Mark A. Chapman	107949.01	9873

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OLIFF & BERRIDGE, PLC
P.O. BOX 19928
ALEXANDRIA, VA 22320

EXAMINER	
LAU, TUNG S	

ART UNIT	PAPER NUMBER
2863	

DATE MAILED: 11/04/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/608,619	CHAPMAN ET AL.	
	Examiner	Art Unit	
	Tung S Lau	2863	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 October 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-45* is/are pending in the application.

4a) Of the above claim(s) *26-31 and 34* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-25,32,33 and 35-45* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *see offica action*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election with traverse of claims in group I, 1-25, 32, 33 and 35-45 is acknowledged. The traversal is on the ground(s) that this is a continuaiton of application 09/716,959, that containing features of the group II in the application and the entire application can be examine without serious burden. This is not found persuasive because Inventions of each of groups I-II are related as subcombinations disclosed as usable together in a single combination. The subcombinations are distinct from each other if they are shown to be separately usable. In the instant case, inventions can each be used for their respective uses has separate utility such as different way to detect movement. See MPEP § 806.05(d).

Invention I and II are related as combination (invention I) and subcombination (invention II). Inventions in this relationship are distinct if it can be shown that (1) the combination as claimed does not require the particular of the subcombinations as claimed for patentability, and (2) that the subcombination has utility by itself or in other combinations (MPEP § 806.05(c)). In the instant case, the combination as claimed does not require the particulars of the subcombination as claimed because Invention II, the combination as claimed does not required determine movement using filter over frequency by varying central frequency of band with maximum bandwidth. The subcombination

(invention II) has separate utility such as determine movement using filter over frequency by varying central frequency of band with maximum bandwidth.

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art because of their recognized divergent subject matter, restriction for examination purposes as indicated is proper. Examining different class (702/33 and 377/19) would required serious burden on the examination see MPEP § 806.05(c). Claims 26-31, 34 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

The requirement is still deemed proper and is therefore made FINAL.

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Information Disclosure Statement

2. Information Disclosure Statement filed on 6-30-2003 is acknowledged by the examiner; The information disclose statement filed 6-30-2004 fails to comply with 37 CFR 1.98(a)(2), which requires a legible copy; each publication or that portion which caused it to be listed; and all other information or that portion which

caused it to be listed. Item 'Digital signal processing application using the ADSP-2100 family volume 2 by the application engineering staff of Analogue Devices DSP division and Digital signal processing application with Motorola DSP602 processor by Mohamed El-Sharkwy' are missing from the application file. Applicant is required to submit a legible copy of 'Digital signal processing application using the ADSP-2100 family volume 2 by the application engineering staff of Analogue Devices DSP division and Digital signal processing application with Motorola DSP602 processor by Mohamed El-Sharkwy'.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims are rejected under 35 U.S.C. 102(b) as being anticipated by Kawamata (U.S. Patent 5,719,789).

Regarding claim 1:

Kawamata discloses an apparatus for determining movement, comprising: means for generating at least two signals of different phase in dependence on the relative position of two objects (Col. 2-3, Lines 65-60), movement of said two objects causing corresponding changes in said at least two signals (Col. 2-3, Lines 65-60, fig. 1a); and a processor for processing said at least two signals (fig.

2a, unit 5), thereby to determine said movement, the processing by said processor being on the basis of locating the constellation states of successive values of the at least two signals in at least one co-ordinate axis system (Col. 2-3, Lines 65-60), said at least one co-ordinate axis system defining at least six separate segments rotationally displaced (fig. 5), and said processor is arranged to monitor the change in said constellation states of the successive values by using at least two processed data samples, said successive samples being obtained by sampling said at least two signals at a predetermined clock rate (Col. 2-3, Lines 65-60, fig. 4a).

Regarding claim 12:

Kawamata discloses an apparatus for determining movement, comprising means for generating at least two signals of different phase in dependence on the relative position of two objects (Col. 2-3, Lines 65-60), movement of said two objects causing corresponding changes in said at least two signals (Col. 2-3, Lines 65-60); and a processor for processing said at least two signals, thereby to determine said movement the processing by said processor is on the basis of locating the constellation states of successive values of the at least two signals in at least first and second coordinate axis systems (fig. 4a,), said at least first and second co-ordinate axis systems each defining at least three separate segments rotationally displaced (fig. 5), and said processor is arranged to monitor the change in said constellation states of the successive values by using at least two processed data samples (fig. 4a, fig., 6a, unit 5), said successive samples being

obtained by sampling said at least two signals at a predetermined clock rate (fig. 9).

Regarding claim 32:

Kawamata discloses a method of determining movement, comprising generating at least two signals of different phase in dependence on the relative position of two objects (Col. 2-3, Lines 65-60), movement of said two objects causing corresponding changes in said at least two signals; and processing said at least two signals (fig. 9), thereby to determine said movement, being on the basis of locating the constellation states of successive values of the at least two signals in at least one co-ordinate axis system (Col. 2-3, Lines 65-60), said at least one co-ordinate axis system defining at least six separate segments rotationally displaced (fig. 5), and said processing includes monitoring the change in said constellation states of the successive values by using at least two processed data samples, said successive samples being obtained by sampling said at least two signals at a predetermined clock rate (fig. 4b, fig. 8, unit 5, Col. 2-3, Lines 65-60).

Regarding claim 33:

Kawamata discloses a method of determining movement, comprising generating at least two signals of different phase in dependence on the relative position of two objects (Fig. 9, Col. 2-3, Lines 65-60), movement of said two objects causing corresponding changes in said at least two signals (fig. 4a, Col. 2-3, Lines 65-60); and processing said at least two signals, thereby to determine said

movement, the processing being on the basis of locating the constellation states of successive values of the at least two signals in at least first and second co-ordinate axis systems (Col. 2-3, Lines 65-60), said at least first and second co-ordinate axis systems each defining at least three separate segments rotationally displaced (fig. 9), and said processing includes monitoring the change in said constellation states of the successive values by using at least two processed data samples, said successive samples being obtained by sampling said at least two signals at a predetermined clock rate (fig. 7a, 7b, 9).

Regarding claim 35:

Kawamata discloses an apparatus for determining movement, comprising: means for generating two signals of different phase in dependence on the relative position of two objects (abstract), the movement of said two objects producing corresponding changes in said two signals; a processor for processing said two signals (fig. 9), thereby to determine said movement whereby the means for processing is on the basis of locating successive values of constellation states of the two signals in a first co-ordinate axis system comprising an axis radiating from an origin (fig. 9) , said processing means being arranged to monitor the change in said constellation states of the successive values by using at least a first and a second data samples which are obtained by sampling the two signals over time (fig. 7a, 7b); wherein a second co-ordinate axis system comprising an axis radiating from an origin is provided whereby the second co-ordinate axis system is rotatable and prior to sampling the second data sample

the second co-ordinate axis system is relative to the first data sample such that the angular position of the first data sample with respect to the second co-ordinate axis system is known (fig. 9, Col. 2-3, Lines 65-60).

Regarding claim 44:

Kawamata discloses a method of determining movement, comprising generating at least two signals of different phase in dependence on the relative position of two objects whereby movement of the two objects causes corresponding changes in the at least two signals (Col. 2-3, Lines 65-60); sampling the at least two signals to obtain a data sample; processing the data sample, on the basis of locating the constellation states of the at least two signals in a first relatively fixed co-ordinate axis system which comprises an axis radiating from an origin (fig. 9) rotating a second rotatable co-ordinate axis system with respect to the first co-ordinate axis system and the processed data sample such that the angular position of the data sample with respect to the second rotatable co-ordinate axis system is is known wherein the second rotatable co-ordinate axis system comprises an axis radiating from an origin; and sampling the at least two signals to obtain a further data sample (fig. 1d, 1f, 1g, 5, 4b, Col. 2-3, Lines 65-60).

Regarding claim 2, Kawamata discloses at least one co-ordinate axes system comprises first and second co-ordinate axes systems each with a plurality of axes defining at least three segments, the axes of the second co-ordinate axis

system being rotationally displaced relative to the axes of the first co-ordinate axis system (fig. 1a, 1c); Regarding claims 3, 17, Kawamata discloses prior to sampling a processed data sample, one of the coordinate axis systems is rotated relative to the previous data sample such that the angular position of the previous data sample with respect to this rotated co-ordinate axis system is known (Col. 1-2, Lines 14-10, fig. 13a-c); Regarding claims 4, 40, Kawamata discloses processor is arranged to derive a prediction of one of said successive values of said constellation states from at least two of said successive values of said constellation states preceding said one value, and to compare said prediction with the corresponding location of said one successive value (fig. 11, unit S8-S12); Regarding claim 5, Kawamata discloses prediction is derived on the basis of a predetermined constraint on permitted variations in said successive values (fig. 11, unit S8-S12); Regarding claims 6, 20, Kawamata discloses predetermined constraint is a maximum permitted change in (Col. 7, Lines 26-31, Col. 6, Lines 32-40); Regarding claims 7, 21, Kawamata discloses predetermined constraint is a maximum permitted charge in acceleration (Col. 7, Lines 26-31, Col. 6, Lines 32-40); Regarding claim 8, Kawamata discloses processor is arranged to determine the separations of each successive value from two adjacent axes of said at least one co-ordinate axis systems (Col. 2-3, Lines 65-61, fig. 1a); Regarding claims 9, 23, Kawamata discloses ratio of separation (fig. 1a); Regarding claims 10, 24, Kawamata discloses successive samples are obtained by sampling said at least two signals at a predetermined

interval (fig. 5); Regarding claims 11, 25, Kawamata discloses successive samples is obtained from a plurality of values of said at least two signals (fig. 1a, 1c);); Regarding claim 13, Kawamata discloses plurality of axis with at least three segments (fig. 5); Regarding claim 14, Kawamata discloses first and second co-ordinate axis systems has a plurality of axes defining said at least three segment, and at least one axis of each of said first and second co-ordinated axis systems are coincident (fig. 5, 4a, b); Regarding claim 15, Kawamata discloses first and second axis having same number of axis (fig. 5); Regarding claim 16, Kawamata discloses first and second axis having same number of axis (fig. 5); Regarding claim 18, Kawamata discloses processor is arranged to derive a prediction of one of said successive values of said constellation states from at least two of said successive values of said constellation states preceding said one value, and to compare said prediction with the corresponding location of said one successive value (fig. 11), unit S8-S12);); Regarding claim 19, Kawamata discloses successive value (fig. 11); Regarding claim 22, Kawamata discloses two adjacent axes of at least one co-ordinate system (fig. 11, 9); Regarding claim 36, Kawamata discloses the rotatable co-ordinate axis system is rotated such that the first data sample is substantially aligned to the axis of the rotatable axis system (fig. 9); Regarding claim 37, Kawamata discloses prediction is derived on the basis of a predetermined constraint on permitted variations in said successive values (fig. 11); claim 39, Kawamata discloses the change in the constellation states that is

monitored is one of change in displacement, velocity or acceleration (Col. 6, Lines 32-40, Col. 7, Lines 2-31); claims 41, 42, Kawamata discloses variation of successive values (Col. 1-2, Lines 65-10); claim 43, Kawamata discloses speed, acceleration higher order derivative (Col. 1-2, Lines 65-10); claim 45, Kawamata discloses the second rotatable co-ordinate axis system defines a movable angular region of uncertainty whereby, if the further data sample lies within this region, an error is flagged (fig. 12, Col. 1, Lines 5-29).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

a. Claim 38 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kawamata (U.S. Patent 5,719,789).

Kawamata discloses an apparatus including the subject matter discussed above except the forbidden zone, but Kawamata discloses an area of error in fig. 12. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Kawamata to have the forbidden zone in order to avoid any error in the system calculation.

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tung S Lau whose telephone number is 571-272-2274. The examiner can normally be reached on M-F 9-5:30. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Barlow can be reached on 571-272-2269. The fax phone numbers for the organization where this application or proceeding is assigned is 703-872-9306 Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

TL

John Barlow
Supervisory Patent Examiner
Technology Center 2800